The Future Of The Cooperative Threat Reduction Program

Final Report

A STUDY FOR
THE DEFENSE THREAT REDUCTION AGENCY
ADVANCED SYSTEMS AND CONCEPTS OFFICE

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D F I I N T E R N A T I O N A L **/ SPARTA, Inc.**

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EXECUTIVE SUMMARY

The Cooperative Threat Reduction program has proven to be an invaluable instrument for the pursuit of US national security and defense objectives in the Newly Independent States. Over the past decade, the Department of Defense has developed a successful "model" for Cooperative Threat Reduction; this model includes both a *strategy* and a *process*. The two elements of this model have been especially effective at the destruction and dismantlement of weapons of mass destruction delivery systems and infrastructure, regardless of the vicissitudes of the US-Russian relationship.

The DFI study team found that the strategy and process of the Cooperative Threat Reduction model could be applied effectively to Department of Defense objectives beyond the current activities in the NIS. This expansion of CTR's application would be advisable *vertically* – to other activities within Russia – as well as *horizontally* – to other countries and challenges beyond the NIS. Within Russia, CTR could be effectively expanded to support the dismantlement and destruction of Russia's submarine fleet, while ensuring the security of any nuclear materials from submarine reactors. With improved political support, CTR could also play an important role in gaining transparency into, if not dismantlement of, Russia's biological weapons infrastructure. Lastly, if the Bush Administration is successful in instituting a process of reciprocal unilateral reductions of nuclear forces, CTR could play an important role in assisting Russia to meet it's unilateral commitments.

In terms of horizontal or geographic expansion, the DFI study team found considerable opportunities for the application of CTR over the next five years. Although no situation presents itself as an ideal candidate for Cooperative Threat Reduction immediately, CTR could provide a valuable instrument to facilitate political progress in a number of US national security priorities. For example, CTR could provide the means of facilitating a US- North Korean agreement to eliminate Pyongyang's ballistic missile program. Alternatively, CTR could be a means of providing security for and ultimately eliminating North Korea's WMD assets during a normalization of relations between the North and South.

Beyond North Korea, CTR could provide the process and strategy for US and partner measures to reduce WMD risks between India and Pakistan. Although there are considerable policy hurdles to overcome with respect to balancing US support of the non-proliferation regime and US desires to minimize the risk of nuclear conflict on the Sub-Continent, through Defense and Military Contacts, CTR can provide a near-term means for the US to engage the Indian and Pakistani military establishments on WMD safety matters. Through export control assistance, furthermore, CTR can provide near-term measures to reduce the risk of proliferation from these states.

Finally, CTR could provide an important tool to support the reintegration of Yugoslavia into the community of European states. CTR Defense and Military Contacts could provide an initial means for the US to gain transparency into Yugoslavia's chemical program as well as its potential nuclear capability. Over the medium-term, although the European Union can provide the financial resources for Yugoslavia's CW destruction and dismantlement activities, CTR could provide the essential technical and logistical support.

Finally, the CTR model provides potential future opportunities for the support of international treaties. For example, CTR could play a supporting role for the potential transparency, safe storage, and/or dismantlement provisions of a Fissile Material Cutoff Treaty. Furthermore, CTR could facilitate the development of future regional arms control accords, such as nuclear weapons free zones.

Cooperative Threat Reduction is ultimately just an instrument for US national security and defense policy. Like other means, it should never be pursued for its own sake. However, when utilized in support of priority objectives, the DFI study team found that CTR could provide a proven strategy and a very effective process to reduce the risk that weapons of mass destruction pose to the United States and our allies.

INTRODUCTION

The Department of Defense's Cooperative Threat Reduction (CTR) program has proven to be an extremely valuable instrument for realizing US national security interests in the NIS. Since 1993, CTR has played a central role in the successful efforts of Kazakhstan, Ukraine, and Belarus to become non-nuclear states. In addition, it has assisted Russia in meeting its START I obligations by supporting the deactivation of over 4800 nuclear warheads and their related delivery systems. CTR also continues to be one of the primary vehicles through which the United States advances its nonproliferation agenda in the NIS.

As the Bush Administration reviews its priorities for the Department of Defense, the success of CTR in promoting US interests on weapons of mass destruction (WMD)-related matters in the NIS begs the question of whether the CTR instrument or "model" can be applied elsewhere. For example, could the lessons learned from, or programs developed for, CTR be effectively applied to other weapons systems or assets outside the NIS; to countries located in other regions; or through multilateral fora?

This report presents the analytical findings of a seven-month assessment of these questions by DFI International and SPARTA, Inc. for the Defense Threat Reduction Agency's Advanced Systems and Concepts Office (DTRA/ASCO). DTRA/ASCO conducted this study with the approval of, and in close

consultation with, DTRA's Cooperative Threat Reduction Directorate. DTRA/ASCO tasked the DFI International-SPARTA study team with the following:

- Characterize and explain the CTR Model
- Evaluate the effectiveness of CTR efforts to date
- Develop cost-benefit criteria to assess potential applications of the CTR Model to:
    - Other countries
    - Other DoD objectives in the NIS
- Assess the potential for a multilateral approach to CTR

Methodology

For this analysis, the DFI International study team developed a methodology that included extensive mining of empirical data on the performance of the CTR Model, interviews with functional and regional experts to determine potential DoD priorities for threat reduction activities, and deductive analysis of where CTR instruments and their associated lessons might be applied to future US national security priorities. To analyze the CTR experience, the DFI study team performed an extensive literature review and conducted 27 interviews with US government officials either working on, or familiar with, the CTR program. (See the Appendix for a list interviews conducted by the study team). In consultation with these experts, the study team developed a set of measures of effectiveness (MOEs) for the various programs and elements within CTR. With these MOEs and the empirical data, the study team conducted a first order assessment of the effectiveness of the full range of CTR activities to date. This assessment formed the empirical basis for the lessons learned that were applied in the subsequent sections of the DFI analysis.

The study team then moved to conduct a similar literature review and interviews with functional and regional experts to ascertain potential applications of CTR beyond WMD in the NIS. The study team conducted a systematic analysis of US National Security interests and objectives as well as related DoD priorities in order to develop a prioritization scheme for potential CTR action. In a parallel track, the DFI study team identified potential multilateral applications of the CTR model and examined potential arms control implications for CTR expansion.

This report outlines the findings of the study team's analysis and is organized into the following sections. First, the report provides background regarding the original impetus for the CTR program and its subsequent evolution. Second, the report develops and explains the CTR Model – both in terms of strategy and process. Third, the paper reports the study team's development and application of measures of effectiveness for CTR expansion. The remainder of the paper is devoted to an evaluation of those areas where the application of CTR lessons or programs might prove to be opportunities for the effective realization of Department of Defense objectives. The report concludes with general observations and recommendations.

BACKGROUND

After the dissolution of the Soviet Union, Russia and the other NIS inherited a massive nuclear, chemical and biological weapons arsenal and infrastructure. With few resources to maintain it and new political and military institutions just beginning to develop, the safety and security of WMD and related technologies in this region became a matter of the greatest concern for the international community. Recognizing the need for prompt action, Senators Sam Nunn (D-GA) and Richard Lugar (R-IN) convinced Congress to pass the Soviet Threat Reduction Act of 1991. This legislation ultimately evolved into the Cooperative Threat Reduction Act of 1993, which provides the legal framework for the Department of Defense's CTR program.

Today, the Cooperative Threat Reduction program provides assistance to the NIS for the safe storage and/or dismantling of at-risk and treaty-limited nuclear, chemical and biological related weapons infrastructure. Since the inception of the program, nine states have participated in CTR programs:

Russia	Kyrgyzstan
Ukraine	Turkmenistan*
Belarus*	Georgia
Kazakhstan	Moldova
Uzbekistan	

*have since been decertified

Among its many accomplishments, the program has assisted Belarus, Kazakhstan and Ukraine to become non-nuclear states. It has supported the deactivation of over 4,800 nuclear warheads and it has eliminated over 375 intercontinental ballistic missiles and their silos.[1]

A Slow Start

The Soviet Threat Reduction Act of 1991 set out six main objectives:

- To destroy nuclear, chemical and other weapons
- To transport, store, disable and safeguard weapons in connection with their destruction
- To establish verifiable safeguards against the proliferation of such weapons
- To assist in planning and resolving technical problems associated with destruction and proliferation
- To fund critical short-term requirements related to weapons destruction
- To involve US technology and technicians when feasible

[1] CTR Program Review, 3 November 2000

Although based on good intentions, the Soviet Threat Reduction Act initially took the Russians by surprise. After years of hostility, Russian defense officials were reluctant to grant access to sensitive weapons sites and facilities. Further, Russia and the other NIS WMD inheritors had little idea what would be required to safeguard and dismantle their weapons stockpiles. Thus, it took over a year for US and Russian negotiators to agree on an initial framework for cooperation.[2]

After agreeing upon a basic framework, US and Russian officials engaged in a lengthy process of crafting the legal "Umbrella" agreements under which cooperative threat reduction would occur. Based on a finding from the Department of Defense legal counsel, DoD officials concluded that all US-Russian threat reduction activities would be required to fit under an umbrella agreement. Among other things, these Umbrella Agreements specifically called for a rigorous audits and examination cycle as well as the application of established US contracting standards to all activities on NIS territory.

Because the process of negotiating Umbrella/Implementing Agreements took over a year to complete, DoD experienced considerable criticism during this period. In particular, critics noted that the Department of Energy's "Lab-to-Lab" program had been much more prompt in standing up a large number of initiatives oriented at improving the security of nuclear weapons infrastructure and scientists in the Ministry of Atomic Energy Industry (MinAtom).

In 1993, the Soviet Threat Reduction Act evolved into the Cooperative Threat Reduction Act. In addition to the original objectives, the new mandate specifically called for the removal of nuclear warheads from the Soviet successor states to Russia, chemical weapon destruction assistance and demilitarization support. DoD was designated the lead agency for this mandate.

In 1994 and 1995, CTR program managers refined their management and acquisition structures to improve CTR implementation. At this point, assistance mainly targeted the safe transportation of nuclear weapons from the NIS into Russia. Because some other CTR initiatives were not perceived to be prospering under DoD leadership, in 1996, non-military aspects of the CTR program shifted outside DoD, allowing the Defense Department to concentrate on "core responsibilities."[3] Material Protection, Control and Accounting (MPC&A) of non-weapons related fissile material became the responsibility of the Department of Energy. Programs related to export control assistance and the International Science and Technology Center shifted to the Department of State. Congress prohibited the obligation of funds for defense conversion projects, and weapons related activities became the focus of DoD CTR efforts.[4]

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[2] "Special Report: Assessing US Nonproliferation Assistance to the NIS" *The Nonproliferation Review* Spring 2000 Vol 7 No 1 pp 55-124.

[3] At this time, "core responsibilities" can be defined as anything weapons related. A similar term devised by the study team, "core competencies", will be used later in the report to refer specifically to weapons destruction and dismantlement projects.

[4] "Special Report: Assessing US Nonproliferation Assistance to the NIS" *The Nonproliferation Review* Spring 2000 Vol 7 No 1 pp 55-124.

Today, Strategic Offensive Arms Elimination (SOAE) and Weapons Protection, Control and Accounting (WPC&A) form the core of DoD's CTR program. Altogether, these projects receive almost three quarters of CTR's funding.[5] Initial goals regarding the transportation and consolidation of warheads in Russia have, for the most part, been accomplished and new projects are more likely to require an extensive decommissioning infrastructure. Due to Russia's evolving political and economic situation, the burden for the provision of this infrastructure has frequently fallen upon the United States.

THE CTR MODEL

The CTR Model is comprised of two elements: a strategy and a process. The *strategy* of cooperative threat reduction, while innovative, is fairly simple: provide assistance to states in order to dismantle WMD and/or reduce the threat of WMD proliferation. The basic principles behind Senators Nunn and Lugar's efforts became the core of the CTR philosophy: it is more cost-effective to eliminate potential WMD threats at their source than to defend against the threat of their eventual use. In short, assuming that the parties involved would not reduce the WMD threat independently, by eliminating potential threats to US territory, citizens, military forces, and our allies, CTR proves to be a more cost-effective element of US national security strategy than deterrence, retaliation, or defensive preparations.

There are at least three requirements for the success of the CTR strategy. These include:

- Compatible national interests;
- Voluntary (active) compliance; and
- Transparency. [6]

It is self-evident that some degree of compatible national interest is essential for cooperative activity to occur. Although the reasons for entering into a cooperative arrangement may not be precisely the same, it should be in the best interest of both parties to participate. For instance, throughout the CTR program, the US and Russia have shared a number of interests. First, both states were concerned about Russia's ability to meet its START I obligations. Moreover, the two states agreed that Moscow probably could not afford to meet these obligations without outside assistance. The two states also shared an immediate interest in the transfer of all nuclear weapons from Kazakhstan, Belarus, and Ukraine.

Yet interests need not be the same for the CTR strategy to be effective; they need only be *compatible*. For example, both the US and Russia had interests in the creation of jobs for WMD scientists and

[5] CTR Program Review, 3 November 2000.

[6] The components of the "Theoretical Model" are derived primarily from the study team's theoretical literature review. These components were then "vetted" and refined through the interview process. For more information regarding cooperative security, see the Carnegie Endowment's *Global Engagement: Cooperation and Security in the 21st Century.*

engineers, albeit the interests were noticeably different. The US was principally concerned with minimizing the risk of WMD "brain drain" from the NIS to states interested in acquiring WMD capabilities. While this was a concern to Russia as well, Moscow was most concerned with the social welfare of its WMD personnel.

Voluntary compliance is a corollary of the first requirement as the success of cooperative activities depends on the willingness of the participating parties to comply with their agreements. Although there is a process of audits and examinations, ultimately the US cannot *compel* Russian compliance with CTR agreements. Both parties must actively participate – and maintain one another's trust – in order for the strategy to be successful.

Trust is engendered in part by the third requirement – transparency. Transparency allows both parties to observe the threat reduction process at work and is essential if partner countries are to have confidence in the strategy. If transparency is not achieved, a project can experience serious setbacks. The Mayak fissile material storage project is just one example where a lack of transparency has hindered project implementation. The Mayak storage facility was designed to house fissile material from disassembled nuclear weapons. At the moment, however, it is impossible for US inspectors to verify the origin of the fissile material stored at Mayak. Until the US is confident that Mayak is in fact a depository for weapons related fissile material, the project will likely continue to be a source of friction between the two sides.

The second aspect of the CTR "Model" relates to the *process* of cooperative threat reduction. This process consists of the following six steps:

- Umbrella Agreements;
- Implementing Agreements;
- Requirements Information;
- Contracting Process;
- Execution/Delivery; and
- Audits & Examinations.[7]

Umbrella Agreements form the basis for the Cooperative Threat Reduction process. Each CTR partner country has signed an Umbrella Agreement with the United States, with the first agreements completed in late 1993. An Umbrella agreement provides "a system of rights, exemptions, and protections for US assistance personnel and for CTR activities and designates executive agents to implement CTR assistance programs for each government."[8] Although establishing these agreements required lengthy negotiation, they have proved to be invaluable frameworks for cooperation. CTR officials and observers point to the Umbrella Agreements as having repeatedly given them, in effect, a framework contract that they can use to insist on cooperation from their sometimes wavering partners at

[7] The CTR Process Model is drawn directly from CTR program literature, as well as expert interviews.
[8] Annual Defense Report, 1997, Office of the Executive Secretary, DoD.
http://www.dtic.mil/execsec/adr97/chap7.html - top

all levels. Equally important, the Umbrella Agreements support the use of US contract law and standards as well as a formal, intrusive audits and examination process (see below) in order to ensure that activities proceed as agreed between the partners. The fact that other departments in the interagency have used CTR's Umbrella Agreements as frameworks for their own specific activities underscore their continued effectiveness.[9]

The Umbrella Agreements authorize the enaction of Implementing Agreements. The Implementing Agreements are detailed documents negotiated for each individual assistance program (e.g., Strategic Offensive Arms Elimination, Chemical Weapons Elimination).[10] These agreements define the scope of the activities covered by the specific programs. Unlike the Umbrella Agreements, which are signed directly between the US government and the partner country government, Implementing Agreements are signed between DoD and the appropriate partner country agency. This has occasionally proven problematic, as bureaucratic structures in the NIS continue to undergo refinement and evolution. Implementing Agreements signed with one agency may need to be renegotiated if that agency is disbanded or a second agency assumes their responsibilities. For example, this is an ongoing challenge for the Chemical Weapons Elimination program.

The Requirements Definition is a component of the model that has proven to be a bit more flexible. Twice a year, DTRA/CTR department heads get together and discuss new program initiatives. Occasionally, a partner country's Ministry of Defense (MoD) will suggest a new project to CTR. Depending on the project, feasibility studies may be conducted before any acquisition steps are taken. Most new projects entail expansion within an already identified program area. As such, new projects generally fall under existing Implementing Agreements. This allows programs to engage in follow-on activity without having to repeat the negotiation process.

The Contracting Process, unique to CTR, employs integrating contractors that take advantage of US management while at the same time utilizing NIS resources. CTR's integrating contractors have extensive global experience, and they provide the on-site presence necessary to efficiently execute complicated projects. At the same time, sub-contracting out to local companies allows the CTR program to create politically valuable "Russian solutions to Russian problems." This Contracting Process, refined over ten years, provides a ready basis to expand effectively into new regions, as many of the contracting firms utilized by CTR have extensive global networks.

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[9] Asst. Deputy Administrator Leonard Spector indicated that the Department of Energy's own process model is now very similar to CTR's, having found the CTR process to be extremely effective.

[10] Annual Defense Report, 1997, Office of the Executive Secretary, DoD. http://www.dtic.mil/execsec/adr97/chap7.html - top

Effective Execution and Delivery is frequently dependent upon the success of the above processes. Delays may be attributed to a host of reasons; however, the groundwork laid in the first four steps is the most effective means to prevent stumbling blocks.

The Audits and Examination (A&E) process has proved to be invaluable for ensuring partner cooperation and for providing transparency to Congress. A&Es are conducted to insure that equipment is being used for its intended purpose and has not been sold or diverted. Projects are subject to A&E for up to five years after the project ends. In a typical A&E case, the site to be inspected receives thirty days notice, and the A&E team inspects for all equipment supplied under the CTR contract. Each piece must be accounted for, and a report is written to verify that the site is or is not in compliance. As a consequence, DTRA/CTR has full transparency into the disposition of its resources.

Alternative Models: KEDO and DOE

As part of its analysis, the DFI study team also considered alternative models of cooperative threat reduction. Two of these alternatives are the Korean Energy Development Organization (KEDO) and the Department of Energy's NIS cooperation activities.

KEDO

On October 21, 1994, the US and North Korea signed an agreement that offered North Korea a package of benefits (2 light water reactors, heavy fuel oil, economic and diplomatic incentives) in exchange for the freezing of its nuclear program. The framework is supported by an international consortium (Japan, South Korea, the European Union) organized by the US to finance and supply the light water reactor project to North Korea. The KEDO model includes:

- A consortium of partner countries with shared national interests acting in concert to modify the behavior/actions of a target state;
- A target state with competing national interests (North Korea); and
- A traditional "carrot and stick" methodology, with token emphasis on voluntary compliance.

The KEDO theoretical model provides an interesting contrast to CTR in several respects. Most importantly, this model attempts to alter a target state's *competing* national interests using economic/diplomatic incentives and implied penalties. If the target state does not comply, the penalty is the revocation of the economic and diplomatic incentives. In contrast, the Cooperative Threat Reduction model, which also uses incentives, does not explicitly condition its aid upon successful compliance with an articulated list of conditions. Success, instead, depends upon the partner countries' willingness to work towards a compatible goal.

The KEDO model very likely has wider application within the international system than does the strategic CTR model. While the CTR model depends upon an alignment of partner country interests, the KEDO model can operate regardless of such an alignment. However, important drawbacks exist. While

both models require substantial monitoring to ensure confidence and compliance, the KEDO dynamic is inherently more conducive to brinksmanship between the participants. Invariably, in such an arrangement, the target country will have substantial leverage with partner country donors.

DOE's Russia Initiatives

The Department of Energy was initially a CTR supporting agency. In 1997, however, DOE became the lead agency responsible for non-weapons related fissile material projects in the NIS. Programs include Initiatives for Proliferation Prevention; Nuclear Cities Initiative; Material, Protection, Control and Accounting; as well as Fissile Material Storage and Plutonium Disposition. Today, DOE's initiatives closely resemble CTR. Many of DOE's programs use the protection of CTR's Umbrella Agreements, although DOE and its partner countries sign individual Implementing Agreements. However, this was not always the case.

In the early 1990s, the "Lab to Lab" program formed the centerpiece of DOE cooperative activities in this NIS. DOE hit the ground running and largely bypassed the establishment of legal frameworks. In contrast to CTR, the DOE strategy emphasized a "bottom-up" approach. Rather than establish Umbrella Agreements or a single integrated strategy, DOE pressed representatives of US weapons labs to establish their own contacts and agreements with their NIS counterparts. With this encouragement and additional official facilitation, US lab scientists were initially extremely successful in securing a wide variety of Lab-to-Lab agreements. The foundation for these agreements was shared interests and the personal relationships between the participants. This distributed, bottom-up approach proved to be extremely successful in the early years. However, as time passed, DOE found its programs increasingly vulnerable to the ups and downs of US-Russian relations as well as personality idiosyncrasies in the Russian nuclear bureaucracy. Struggling with accountability issues, DOE began to model its new initiatives on the CTR process. Today, there is little substantial difference between the way in which DOE and CTR implement their cooperative threat reduction programs.

The CTR Program: Performance to Date

In order to understand the potential for functional expansion, the study team conducted a systematic assessment of all CTR projects to date. The assessment included two discrete components: a performance evaluation based upon a CTR project's ability to meet national security and program objectives; and a simple cost assessment.

Performance Evaluation

The performance evaluation used US national security and DTRA/CTR program objectives to determine the success of CTR projects. Objectives identified include seven national security objectives drawn from a *National Security Strategy for A New Century:*

- Enhance American security while bolstering economic prosperity;
- Promote democracy;
- Constrain inventories of WMD while preventing the proliferation and spread of WMD;
- Contribute to regional stability;
- Shape the international environment in favor of US interests;
- Aid the US ability to respond to a crisis while preparing the US for future challenges; and
- Promote transparency and confidence building.

In addition, the performance evaluation used six DTRA/CTR program objectives, as identified by DTRA/CTR:

- Accelerate START levels of reduction;
- Enhance safety, security, control, accounting, and centralization of nuclear weapons and fissile material to prevent their proliferation and encourage their reduction;
- Deter the use of WMD while also reducing present, and preparing for, future threats of WMD use;
- Assist the FSU to eliminate and prevent proliferation of biological and chemical weapons and associated capabilities;
- Encourage military reductions and reform and reduce proliferation threats in the FSU; and
- Help to build relationships.

Using the objectives listed above, the study team then assessed the performance of each CTR project according to the following categories:

High Performance	Medium Performance	Low Performance
• Project meets most of all (80% or more) of its objectives (national security and programmatic)	• Project meets most (50-80%) of its objectives (national security and programmatic) • Project demonstrates potential for success, but its performance is constrained by outside factors	• Projects meets less than half (50%) of its objectives (national security and programmatic)

DTRA/CTR organizes its projects into four categories: nuclear weapon destruction and dismantlement, biological and chemical weapon elimination, chain of custody projects and demilitarization. Of these categories, nuclear weapon destruction and dismantlement received the most "high" performance evaluations, BW/CW elimination and chain of custody projects on average earned a "medium" evaluation, and demilitarization efforts, on average, demonstrated "low" performance.

However, an additional conclusion can be reached. Regardless of the category in which DTRA/CTR places its projects, weapons destruction and dismantlement projects usually rate "high." Protection activities generally rate "medium," and nonproliferation support activities generally score "low."[11] It

[11] Defense and Military Contacts and collaborative Border Security initiatives with Customs and the FBI are notable exceptions to this trend, and may make good candidates for expansion.

seems evident that DTRA/CTR's "core competency" is the destruction and dismantlement of weapons systems and their infrastructure. As a consequence, the study finds, from a program effectiveness point of view, this area to be the best candidate for expansion.

It is possible for CTR to improve projects receiving a *medium* or *low* performance evaluation. In most cases, the following "lessons learned" could improve overall CTR performance:

- Clearly identify consistent, long-term objectives;
- Link long-term objectives to specific US national security objectives;
- Clearly define the scope of each project;
- Develop a means by which project implementation can be consistently verified;
- Develop objective and defensible MOEs for each project; and
- Make verification measures and well-defined MOEs a prerequisite for project implementation.

After each project was evaluated, it was defined in terms of its financial cost. In this way, each project's overall performance could be contrasted with its real cost to date. Using this methodology, the study team was able to identify costly projects that met few objectives (CW Destruction), while at the same time identifying lower cost projects that demonstrated a potential for success (CW Production Facility Demilitarization).

OPPORTUNITIES FOR CTR EXPANSION

The CTR model has proven to be an extremely valuable policy tool within the NIS. Can it, however, have useful applications outside this region? In order to answer this question, it is necessary to develop expansion criteria that provide practical guidelines for the expansion of the Cooperative Threat Reduction beyond its current mandate.

Expansion Criteria

In order for the study team to evaluate the potential for CTR expansion, two questions had to be answered:

- Where could CTR expand?
- What could CTR do in an expanded environment?

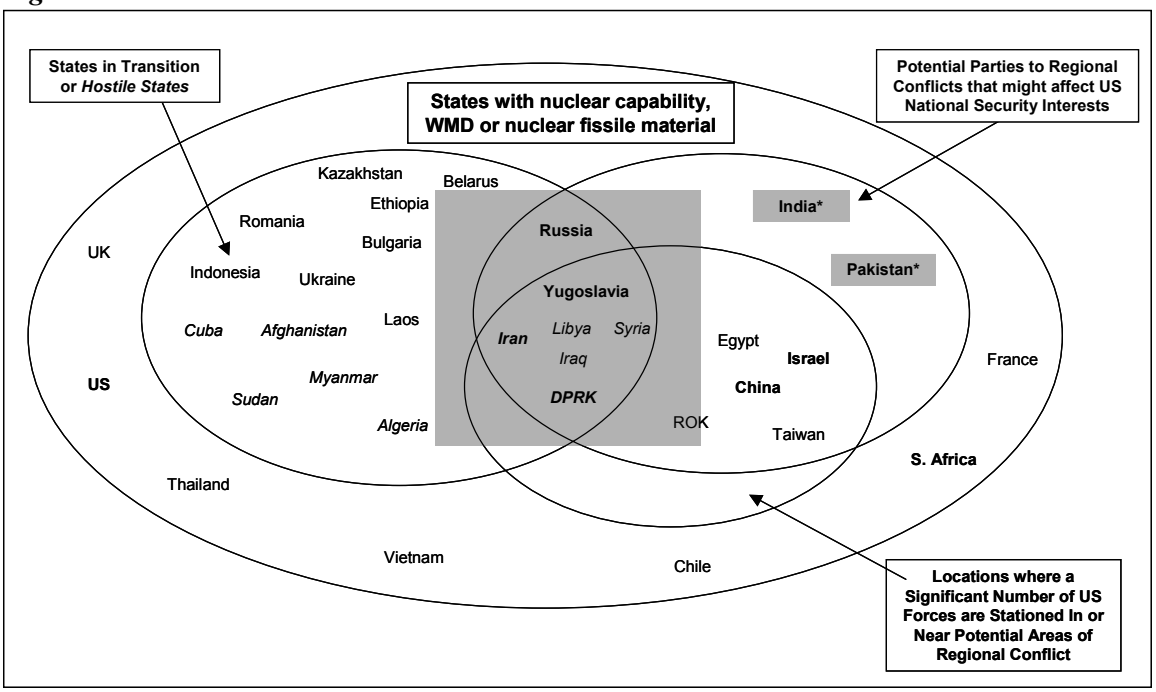
Using national security and defense strategy documents, the study team identified four nonproliferation priority categories for CTR program expansion:

- States with nuclear capability, other WMD or nuclear fissile material;
- Terrorist states and states in transition;
- Potential parties to regional conflicts that might affect US national security interests; and

- Locations where a significant number of US forces are stationed in or near potential areas of regional conflict.[12]

The study team used a simple methodology based on Venn diagrams to focus on country candidates for expansion. As Figure 1 demonstrates, Libya, Syria, Iran, Iraq, Yugoslavia and North Korea, represent the intersection of all of these criteria. In addition, India and Pakistan were evaluated as specified in the study's statement of work.

Figure 1: Candidate Countries



Having narrowed the field to these eight countries, the study team then evaluated each country according to the following issues:

- Functional capabilities (nuclear, chemical, biological, delivery system);
- Proliferation risk (site security, insider threat, proliferation history);
- Security environment (primary, significant, indirect); and
- Political environment (improving, status quo, worsening).

Functional capabilities were evaluated using unclassified sources to determine the degree to which a country possessed WMD and WMD delivery systems. In most cases, countries scored *high* if they possessed WMD, *medium* if they had the infrastructure to produce WMD, and *low* if they sought to create

[12] These categories are highlighted in the "Arms Control and Nonproliferation" section of the White House Publication *A National Security Strategy For A New Century*, December 1999.

the infrastructure to produce WMD. Nuclear, chemical, and biological weapons as well as their delivery systems were evaluated separately.

Proliferation risk was determined using three categories: site security, insider threat, and nonproliferation history. Site security considered the state of physical security at WMD production and storage sites. Insider threat considered the degree to which incentives and conditions created an environment open to proliferation; and proliferation history considered a countries' likelihood to proliferate based upon past action.

The study team used the first two categories, defining functional capability and proliferation risk, to determine the ideal areas in which CTR activity *should* take place. This "realm of possibilities" was then filtered through the final two categories, security environment and political environment, to determine the realistic areas in which CTR activity *could* take place.

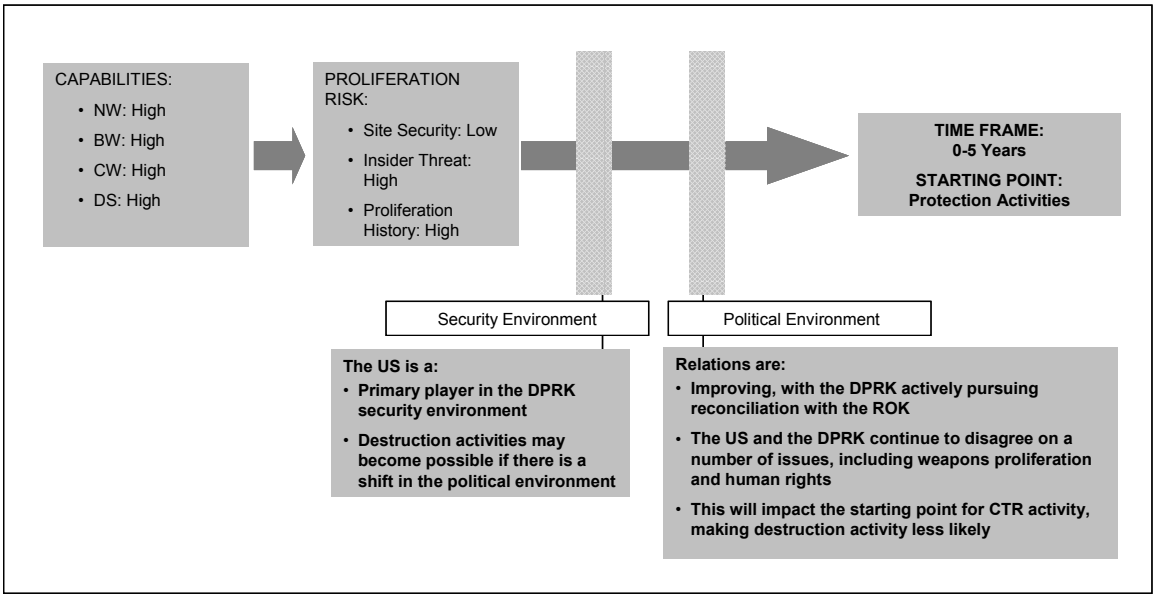
The idea that security and political environments limit the ability to conduct CTR activity is the direct result of an interview the study team conducted at the Department of State. The team decided to define a security environment using three terms:

- **Direct**: In which the US and a target country are involved directly in a relationship with security implications, with this relationship dominating the security environment,
- **Significant**: In which the US and another country are involved in a relationship with security implications, however, additional players strongly influence the security environment
- **Indirect**: In which the US is a peripheral player in the security environment

Considering these factors in parallel with the political environment (improving, status quo, or worsening) – the study team could then determine the likelihood with which CTR activity might take place.

Using the security and political environment criteria, the study team suggested potential timeframes for CTR action and a likely "starting point" activity. Timeframes were defined in the short term (0-5 years) and the long-term (6+ years), while activity starting points reiterated the three categories identified in the CTR performance review: weapons destruction and dismantlement, protection activities and nonproliferation support. Figure 2 is an example of the expansion methodology (North Korea):

Figure 2: Expansion Methodology



Expansion Scenarios

The study team evaluated each country in terms of the expansion criteria. Each recommendation received a cost and performance evaluation based upon the prior analyses of historic CTR projects. Where appropriate, the study team identified a catalyst for action as well as potential practical implications, including policy trade-offs, domestic concerns and likely risks. The results provide a "road map" for CTR regional and functional expansion.

Several lessons can be learned from this "road map." Most importantly, there are significant opportunities for CTR expansion. However, the majority of these opportunities exist in the areas of protection activity and nonproliferation support. It may be possible for CTR to use protection activities and nonproliferation support to build a foundation upon which destruction activities could eventually be carried out; however, CTR should address the unresolved issues associated with these activities prior to expansion. Programs such as Defense and Military Contacts, which already demonstrates *high* performance, are good candidates for immediate expansion.

Based upon individual country analyses, potential activities in the short-term (0-5 years) for the following countries include:[13]

North Korea

North Korea represents one of the most significant opportunities for CTR in the near- and medium-term. Recent political developments indicate a positive shift in the regional political environment, with increasing focus on the normalization of relations between North and South Korea. If conditions continue

to improve, unification of the Korean peninsula is not outside the realm of the possible. Should the trend towards normalization continue, changing perceptions in the security environment might create a situation in which CTR could become substantially involved in weapons destruction and dismantlement.

There are at least two scenarios in which CTR might come to play an important role in North Korea. First, and most importantly, should the process of normalization of relations between DPRK and the Republic of Korea (ROK) continue, the North's WMD capabilities inevitably will become a primary near-term issue. The process of normalization will likely require, at a minimum, increased transparency into the North Korean WMD programs. At a maximum, it might include the dismantling of the North's WMD arsenal and related infrastructure.

The second scenario involves building upon the KEDO framework to greater transparency and, perhaps, dismantlement of weapons and infrastructure. In the near-term, the challenge for the KEDO participants is verification of North Korea's compliance with the requirement to destroy equipment cited in the 1994 agreement.

In both cases, the Cooperative Threat Reduction program cannot provide many of the side payments (e.g., food aid and development assistance) that will be critical to any deal. However, ROK and other interested partners can be counted on to provide significant financial resources to support these and other initiatives.

CTR can play an essential role in providing the vehicle and framework to institutionalize the WMD-related aspects of normalization. In this regard, CTR could provide the technical expertise as well as the process for transparency and/or dismantlement activities.

First, CTR experience with chain of custody programs can be applied to securing and moving any suspect materials. Second, CTR personnel might assist in assessing the restructuring requirements for any facilities found not to be in compliance with IAEA standards. Similarly, CTR could support the destruction (or the verification of the destruction) of the Yongbyon reactor.

Over the longer-term, CTR could provide the technical and logistical programs to support a decision by North Korea to sign the Chemical Weapons Convention. As a first step, CTR might provide facility security for the DPRK's storage and production facilities. As a second step, CTR could provide assistance for the destruction of the CW arsenal and the demilitarization of production facilities.

Finally, in the event of reunification between the two Koreas or a significant improvement in US-DRPK relations, CTR could play an important role in eliminating Pyongyang's delivery systems and their related infrastructure. From a US perspective, the top priority here would be the destruction of DPRK's ballistic missiles and their launch infrastructure. Just behind that, however, the priority would be the destruction of North Korea's artillery capabilities near the Demilitarized Zone, whether through the

[13] To view the detailed country evaluations, please see section 3.3 of the DFI/SPARTA study

destruction of artillery tubes or the filling in/destruction of the bunker and tunnel infrastructure in which they are housed.

India

India has never shown significant interest in collaborative nonproliferation activities, particularly with the United States. Improvements in political relations between the US and India, however, may make low level, nonproliferation initiatives increasingly possible. Ultimately, these initiatives could lead to more substantial threat reduction activity should the security environment in South Asia change perceptibly.

Nevertheless, nuclear competition between India and Pakistan make these two countries priorities for US national security and the Department of Defense. However, US capabilities to engage these governments on nuclear issues are currently blocked by an important policy obstacle: USG refuses to take any steps that would validate these nuclear programs. The USG continues to insist on both governments joining the Non-Proliferation Treaty (NPT) as non-nuclear states. Thus, although there is a range of compelling activities that CTR might valuably pursue to reduce the risk of accidental nuclear war or proliferation on the sub-continent – e.g., technical assistance on permissive action links, site security measures for research and production facilities, etc. – CTR's role will be proscribed for the foreseeable future.

Nevertheless, there are a number of positive initiatives that CTR might support over the next five years. In terms of minimizing proliferation risk, CTR could provide export control assistance to the Indian government. The CTR Defense and Military Contacts program, furthermore, could be used to build the foundation for future transparency into Indian military thinking on nuclear weapons use. Over the longer-term and assuming that political conditions are met, CTR could provide technical assistance in the development of more secure command and control capabilities for Indian nuclear weapons and delivery systems.

CTR can also be used to gain a foothold into Indian WMD programs by working with New Delhi's chemical and biological programs. For instance, India conceded in 1997 that it possessed a CW stockpile. CTR technical support could be used to enhance site security in the near-term as well as facility demilitarization and stockpile destruction over the medium-term. In terms of biological capabilities, although India appears to possess only a defensive program, CTR-sponsored ISTC-like activities could be used to gain transparency into India's well-developed biotech industry.

Pakistan

Pakistan shares many of India's political obstacles for US CTR cooperation. However, Pakistan has expressed an interest in nonproliferation activity in the past and shares a long history of military cooperation with the United States. This may make Pakistan a good candidate for low-level

nonproliferation activity in the near term. As with India, however, a dramatic shift in the security environment would have to occur prior to CTR expansion in core competency areas.

Because of its shared border with Afghanistan, the need for prompt action is acute for Pakistan. In particular, export control programs are paramount in importance in order to minimize the risk of the transfer of WMD materials to terrorists and other actors who use Afghanistan as a safe haven.

Similar to the case in India, the US also has an interest in gaining transparency into the Pakistani defense establishment's thinking about and planning for nuclear weapons. CTR's Def/Mil Contacts program can be a valuable instrument to gain access, even if WMD transparency is not the explicit objective.

Over the longer-term, as in the case of India, a more robust use of the CTR instrument in Pakistan would depend upon a change in the current contradiction between US policy and Pakistan's nuclear status.

Yugoslavia

The 2000 electoral defeat of President Slobodan Milosevic from the Yugoslavian government opened the door to potential US Cooperative Threat Reduction with Belgrade. Yugoslavia poses a WMD concern to the United States in terms of its certain chemical and possible nuclear programs. CTR can play a role in supporting the transparent elimination of these programs and, by extension, the integration of Yugoslavia into the larger European community.

In the nuclear arena, CTR programs could be used to pursue Material Protection, Control, and Accounting. If fissile material exists in Yugoslavia, CTR could serve as the vehicle for its removal. Although the European Union would certainly be willing to fund such activities, arguably they lack the technical and logistical capabilities to conduct them independently.

In the chemical arena, CTR could be used to improve security at Yugoslavian chemical warfare facilities in the near-term. Over the longer-term, the obvious area for cooperation would be the demilitarization of these facilities. In addition, there is a potential opportunity for EU funding of CTR technical assistance in the destruction of Yugoslav stockpiles.

More broadly, CTR's Def/Mil Contacts program could serve as an excellent vehicle to build bridges to the Yugoslav military establishment. With a normalization of Belgrade's relations with Europe and the US, the Yugoslav military arguably will be willing to give up its WMD capabilities and ambitions. Thus, the Def/Mil Contacts program could be a vehicle to open this discussion and provide the US with increased transparency.

Vertical Expansion

Russia

While there is a range of expansion opportunities for Cooperative Threat Reduction, some of the most important potential contributions for CTR continue to reside in Russia. For example the Kursk tragedy underscores the crumbling infrastructure in the Russian Navy. CTR can play an expanded role in the destruction and dismantlement of Russian submarines and in securing their reactor cores. Furthermore, the legacy of a substantial Russian biological weapons infrastructure – in terms of people *and* facilities – represents a high priority target for future CTR activities. Lastly, Russia's apparent inability to meet its CWC obligations, while not a technical challenge, could be addressed through the CTR framework with financial support from other partners.

Finally, CTR will likely continue to play an important role in facilitating Russia's efforts to reduce its strategic nuclear forces. Regardless of whether the next round of reductions of strategic offensive forces occurs in the START framework or through reciprocal unilateral measures, the US will have a continuing interest in supporting Russian weapons destruction and transparency. CTR has proved to be one of the best instruments available to the US for these challenges.

Other Opportunities for Expansion

Based upon expert interviews conducted by the study team, CTR appears to function best when supporting an established treaty or arms control agreement. CTR expansion is likely to be most successful if it is in support of an expanded arms control initiative, or if it can help a candidate country meet treaty obligations. Strategic Offensive Arms Elimination, supported by the START treaties, is just one example of this.

Further, although CTR is not a substitute for arms control, it can work as a "pot sweetener" in arms control and treaty negotiations. New treaties may provide significant new opportunities for CTR, and these could include:

Fissile Material Cutoff Treaty (FMCT)

An FMCT would require signatories to:

- Ban production of fissile material;
- Suspend assistance to other states involved in the production of fissile material; and
- Accept IAEA inspection to verify treaty obligations.

Potentially, this could create a host of new opportunities for CTR in the areas of MPC&A and fissile material facility dismantlement. CTR could provide the technical expertise FMCT signatories will require for the safe storage of their fissile material and, eventually, the dismantlement of their fissile

material facilities. Further, CTR could bring its experience to bear in the creation of transparent MPC&A and dismantlement processes necessary for effective treaty implementation.

Regional arms control accords (e.g. new nuclear weapons free zones)

Regional arms control accords could provide new areas in which CTR can expand its core competency activities. For example, expanded nuclear weapons free zones might enable CTR to become involved in the rollback of nuclear weapons programs. Further, agreements similar to the Conventional Forces in Europe (CFE) model that require participating countries to meet regular, proscribed disarmament goals may provide new opportunities for CTR action.

Regional arms control accords continue to be more conceptual than actual; however, CTR could be a valuable pot sweetener in the negotiation process.

The Multilateral Variant

Over the years, the United States has tried to include allies and partners in cooperative threat reduction activity. These efforts have generally not met with significant success. Two factors may account for this failure: a lack of interest on the part of our allies, and a lack of interest within the US cooperative threat reduction community. Unfortunately, the US has little control over the former. Unlike the US, most countries do not perceive WMD proliferation to be a primary threat to national security. Unless that perception changes, enthusiasm for multilateral nonproliferation initiatives will continue to be elusive.

The latter, however, can be addressed. Multilateral initiatives are not always appropriate, but they can make a valuable contribution to CTR activity under the right circumstances, and it is important to convey this fact to those involved with cooperative threat reduction in the US.

The study team began an investigation of multilateral activity by identifying the various organizations likely to engage in cooperative threat reduction. These organizations include:

- Foreign governments;
- Non-governmental organizations;
- Ad-hoc bodies;
- Private organizations;
- Regional organizations; and
- International organizations.[14]

Next, the study team identified three scenarios in which CTR and the multilateral variants might interact. The first option, similar to the current situation, would involve CTR and the multilateral variants working separately, without coordination. The second option would once again involve CTR and the multilateral variants working separately, however, their activities would be coordinated in order to implement threat reduction activity more effectively. Finally, the last scenario envisions CTR working within an international or regional organization in order to gain access that may otherwise be withheld. Of the last two options, the study team found the second scenario most likely, based upon information obtained during the interview process.

Four hypothetical examples were identified. First, a multilateral variant can provide a mechanism to work with a hostile state when the US is unable to engage that state directly. This could potentially create new opportunities for CTR. Second, a multilateral variant can increase domestic support through burden sharing, especially when US political will is uncertain. Next, a multilateral variant can provide additional resources when US law restricts or prohibits certain activities (e.g., defense conversion). Finally, a multilateral variant can provide greater international political authority and legitimacy to CTR projects and cooperative threat reduction efforts in general.

The multilateral variant has drawbacks, however. Working in a multilateral environment reduces US control over a project. Further, the need for coordination between parties increases complexity in program implementation. Finally, multilateral variants will require more time consuming planning and administration. Therefore, while the multilateral variant can potentially enhance accessibility and create a larger resource base, it may ultimately hinder efficient project implementation. Application of the multilateral variant would therefore be extremely project specific, based upon potential requirements and the US timeframe for action.

SUMMARY OF RECOMMENDATIONS

The Cooperative Threat Reduction program has proven to be an invaluable instrument for the pursuit of US national security and defense objectives in the Newly Independent States. Over the past decade, the Department of Defense has developed a successful "model" for Cooperative Threat Reduction; this model includes both a *strategy* and a *process*. The two elements of this model have been especially effective at the destruction and dismantlement of weapons of mass destruction delivery systems and infrastructure, regardless of the vicissitudes of the US-Russian relationship.

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[14] The study team devised several matrices that identified specific organizations likely to participate in CTR activity. Of these organizations, some are already working in the area of nonproliferation or WMD control. See section 3.4 of the study for additional information.

The DFI study team found that the strategy and process of the Cooperative Threat Reduction model could be applied effectively to Department of Defense objectives beyond the current activities in the NIS. This expansion of CTR's application would be advisable *vertically* – to other activities within Russia – as well as *horizontally* – to other countries and challenges beyond the NIS. Within Russia, CTR could be effectively expanded to support the dismantlement and destruction of Russia's submarine fleet, while ensuring the security of any nuclear materials from submarine reactors. With improved political support, CTR could also play an important role in gaining transparency into, if not dismantlement of, Russia's biological weapons infrastructure. Lastly, if the Bush Administration is successful in instituting a process of reciprocal unilateral reductions of nuclear forces, CTR could play an important role in assisting Russia to meet it's unilateral commitments.

In terms of horizontal or geographic expansion, the DFI study team found considerable opportunities for the application of CTR over the next five years. Although no situation presents itself as an ideal candidate for Cooperative Threat Reduction immediately, CTR could provide a valuable instrument to facilitate political progress in a number of US national security priorities. For example, CTR could provide the means of facilitating a US- North Korean agreement to eliminate Pyongyang's ballistic missile program. Alternatively, CTR could be a means of providing security for and ultimately eliminating North Korea's WMD assets during a normalization of relations between the North and South.

Beyond North Korea, CTR could provide the process and strategy for US and partner measures to reduce WMD risks between India and Pakistan. Although there are considerable policy hurdles to overcome with respect to balancing US support of the non-proliferation regime and US desires to minimize the risk of nuclear conflict on the Sub-Continent, through Defense and Military Contacts, CTR can provide a near-term means for the US to engage the Indian and Pakistani military establishments on WMD safety matters. Through export control assistance, furthermore, CTR can provide near-term measures to reduce the risk of proliferation from these states.

Finally, CTR could provide an important tool to support the reintegration of Yugoslavia into the community of European states. CTR Defense and Military Contacts could provide an initial means for the US to gain transparency into Yugoslavia's chemical program as well as its potential nuclear capability. Over the medium-term, although the European Union can provide the financial resources for Yugoslavia's CW destruction and dismantlement activities, CTR could provide the essential technical and logistical support.

Finally, the CTR model provides potential future opportunities for the support of international treaties. For example, CTR could play a supporting role for the potential transparency, safe storage, and/or dismantlement provisions of a Fissile Material Cutoff Treaty. Furthermore, CTR could facilitate the development of future regional arms control accords, such as nuclear weapons free zones.

Cooperative Threat Reduction is ultimately just an instrument for US national security and defense policy. Like other means, it should never be pursued for its own sake. However, when utilized in support of priority objectives, the DFI study team found that CTR could provide a proven strategy and a very effective process to reduce the risk that weapons of mass destruction pose to the United States and our allies.

Appendix A - Interview List

Department of Defense - Acquisitions and Technology/DTRA/CTR Program
Brigadier General (Retired) Thomas Kuenning, Jr., Director
Colonel (USAF) Bob Dickey, Deputy Director
John Connell, Country Director, Ukraine
Bill Youngstrom, Project Manager, Russia & Ukraine
Paul McNelly, & Jim Fargo, CBW
Ed Archer, Contracting Approaches
Tom Rutherford, Construction
Paul Boren, Integration

Department of Defense - Policy/Strategy and Threat Reduction/Threat Reduction Planning
Mr. James Reid, Director, CTR Policy
Colonel Dick Rock, Deputy Director, CTR Policy,

Department of Defense - Policy/Strategy and Threat Reduction/Russia, Ukraine, Eurasia
Ms. Lorna Johns, Central Asian States
Colonel Klaus Mullinex, Director, Slavic States
Ms. Katie Johnson, Director, Plans and Programs

Department of State
Kim Savit, Director for Security Programs, Office of the Coordinator for US Assistance to the NIS
Rex Patterson, Bureau of European Affairs, Office of Policy and Regional Affairs
Michael Fooks & Craig Karp, Export Controls/Nonproliferation
Anne Harrington & Phil Dolliff, Office of Proliferation Threat Reduction (Science Centers)
Steve Saboe, Nonproliferation Defense Fund

DOE
Leonard S. Spector, Assistant Deputy Administrator, Arms Control and Nonproliferation
William Desmond, Director, Nuclear Cities Initiative
Ron Cherry, Phil Robinson & Greg Sheppard, International Safeguards (MPC&A in the NIS),
Laura S. Holgate, Assistant Deputy Administrator, Fissile Materials Disposition (Plutonium Disposition)

NGO's and Academics
Ken Luongo, Executive Director, Russian American Nuclear Security Advisory Council
William Hoehn, Washington Office Director, Russian American Nuclear Security Advisory Council
David Bernstein, Center for International Security Cooperation, Stanford University